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E-Commerce Innovations in Jordan: Theoretical Model Development and Implications for Small Businesses

Nabeel Al-Qirim
College of Information Technology, nalqirim@uaeu.ac.ae

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College of Information Technology
nalqirim@uaeu.ac.ae

ABSTRACT

Electronic commerce (EC) adoption in small to medium-sized enterprises (SMEs) in developing countries (DC) is confronted with different difficulties. These challenges emanate from the SME itself and from micro and macro forces. By developing an adoption and diffusion model, this research endeavors to investigate the depth of the EC phenomenon in SMEs in developing countries represented here by the case of Jordan. Jordan represents an exemplary case to follow in the region due to its human capital capabilities and leadership in embracing various initiatives and novelties. The research findings and the emerging implications suggested the weakness of the EC phenomenon in the cases and pointed to a unique perspective concerning the adoption context of the SMEs in Jordan. These issues are discussed in this research raising different determinants, SME's specifics, and theoretical and professional contributions and implications.

Keywords

SMEs, Jordan, electronic commerce, developing countries, technological innovations theories.

INTRODUCTION

It is believed that latest technological trends have led to the lowering of costs, and higher quality products in businesses in general and in Small to Medium-Sized Enterprises (SMEs) more specifically (Oyelaran-Oyeyinka & Lal, 2006). Internet technologies like eCommerce or eBusiness (EC) provides different opportunities to SMEs to gain access to international markets and to overcome internal problems related to their limited resources and weak organizational structure (Blili & Raymond, 1993). In developing countries (DC), Nasco et al. (2008) raised the importance and contribution of SMEs to the economy and growth of their countries.

Further, despite the growing belief about the importance of EC to businesses in general and to its increased penetration in DC (Oyelaran-Oyeyinka & Lal, 2006) the fact remains that EC is not largely diffused inside the business environment (Molla & Licker, 2005). In looking for reasons for such slowness in adopting technological innovations in SMEs, researchers reported the weakness of the sector at different organizational and managerial (organic and central organizational structure and decision-making), technological, individual (central role of the CEO) and environmental (new technology, technology vendors, consultants, competition, supplier/buyer, rivals, newcomers, substitute products) levels (Blili & Raymond, 1993; Poon, 1999). Small firms often lack resources for innovation and focus mainly on surviving (Oyelaran-Oyeyinka & Lal, 2006). Molla and Licker (2005) found that contrary to businesses in developed countries, businesses in DC suffer from weak and sometimes non-existing infrastructure, have limited EC awareness in general and about Internet use and EC practices more specifically, lack regulatory EC procedures and governing laws leading to a lack of trust, most businesses are small and lack resources and businesses in DC tend to have a highly centralized structure.

Jordan[1] is considered a small developing country, located in the Middle East with a total area of 91,000 sq. Km. Jordan has a population of 5.16 million of which 1.2 million live in Amman (Capital) alone. The Jordanian economy requires special attention, especially in areas of capacity building and competitive ability. This need is exacerbated by Jordan's entry into several Free Trade Agreements. Such agreements, however, also pose threats for local SMEs in services and manufacturing sectors. Having to compete with international corporations on quality and price requires further investment in building the human capital in SMEs[2]. Such challenges facing the Jordanian economy and proposed solutions are summarized in Table 1[3,4,5]

[1] http://www.mit.gov.jo/AboutJordan_En.asp; http://www.american.edu/initeb/zt9072a/jordan.htm,
[2] http://www.empretecjordan.org/aboutus2_1.shtm
[3] http://www.undp-jordan.org/Default.aspx?tabid=119
[4] http://www.empretecjordan.org/aboutus2_1.shtm
[5] http://www.jordanembassyus.org/10042001006.htm

Constraints	Constraints	Suggested solutions
• lack of resources • limited and inappropriate skills • lack of knowledge and experience in running a viable business • lack of mobility which limits access to markets • limited exposure to business models especially in sales management • poor business-development opportunities • inadequate entrepreneurial skills	• lack of partnership initiatives • Lack of a focused policy toward the SME sector. • Scarcity of natural and water resources. • Increasing competition from foreign products coupled with a lack of marketing and distribution skills. • Lack of technological know-how. • Limited access to technology and business information • The use of traditional and low-productivity equipment and machines. • Low quality products. • Limited access to formal financial services. • Limited access and/or lack of customized technical assistance programs.	providing high quality business support including: • training to develop and improve the managerial skills of SMEs, • assist SMEs in selling their products and services to the government • assist SMEs to fully participate in, and benefit from, IT, especially EC. • access to information, counseling and business development assistance • increasing SMEs access to capital and credit

Table 1. Constraints facing the Jordanian economy and suggested solutions

Jordan represents an exemplary case to follow in the region due to its human capital capabilities and leadership in embracing various initiatives and novelties. However, continuing and sustaining such efforts is not clear in the Jordanian context. Jordan is also attractive globally as Jordan represents a liberal and modern economic and political regional model. This is propelled by a strong leadership commitment, active private sector, and clear agenda that go hand-in-hand with global trends[6].

Therefore, this research attempted to study EC adoption in SMEs in Jordan and endeavored to answer the following research questions, *how can SMEs succeed in adopting and using EC more effectively in their businesses in Jordan*. This question entails looking at the factors that impact EC adoption and diffusion in SMEs in Jordan as an objective in this research. In the following, the research introduces an adoption framework followed by the research methodology. The research then introduces the research findings followed by a discussion section.

THEORETICAL FRAMEWORK

The available adoption and diffusion theories (IDT) provided essential influencing factors on innovations adoption and diffusion and emphasized the importance of technological, organizational and environmental characteristics on IS adoption (Chau & Tam 1997; Rogers, 1983, 1995; Tornatzk & Fleischer 1990). In view of the technological innovation theories, Rogers' (1995) model appeared to be the most widely accepted model by researchers in identifying 'perceived' critical characteristics for innovations in IS research (Iacovou et al. 1995; Kaplan 1999; Karahanna et al. 1999; Moore & Benbasat 1991, 1996; Premkumar & Roberts 1999; Thong 1999). However, the implications here are twofold. Initially, the same researchers who endorsed Rogers' (1983, 1995) model argued that this model should be blended with other contexts/factors in order to provide more holistic adoption models (Attewell, 1992; Chau & Tam, 1997; Moore & Benbasat, 1991, 1996). Secondly, extending adoption and diffusion EC models produced in developed countries to businesses in DC is futile as the two business sectors vary significantly. At the outset, firm performance is highly associated with learning capabilities, levels of technology, and a host of firm-level knowledge, skills and experience (Oyelaran-Oyeyinka & Lal, 2006). Molla and Licker (2005) found that several studies of EC in DC have emphasized the influence of contextual impediments related to physical, economic, technological, legal, and financial infrastructure, and socio-economical (environmental and organizational) on EC adoption. They emphasized that rigorous research looking at what drives EC adoption in businesses in DC beyond such contextual impacts is limited and stressed the need for more approaches and models that are flexible enough to capture change and hence, understand EC adoption in DC. They suggested an interactionism approach which allows for the treatment of all these contextual impacts and their interaction in one dynamic framework. Elahi and Hassanzadeh (2009) examined the impact of technical, organizational, and inter-organizational contexts on EC adoption and found these contexts significantly correlated. Accordingly, the following contexts are adopted in this research. For the full theoretical argument refer to Al-Qirim (2010). Accordingly, Figure 1 shows the developed adoption and diffusion model.

[6] http://www.mop.gov.jo/pages.php?menu_id=113&local_type=1&local_id=79&local_details=1&local_details1=

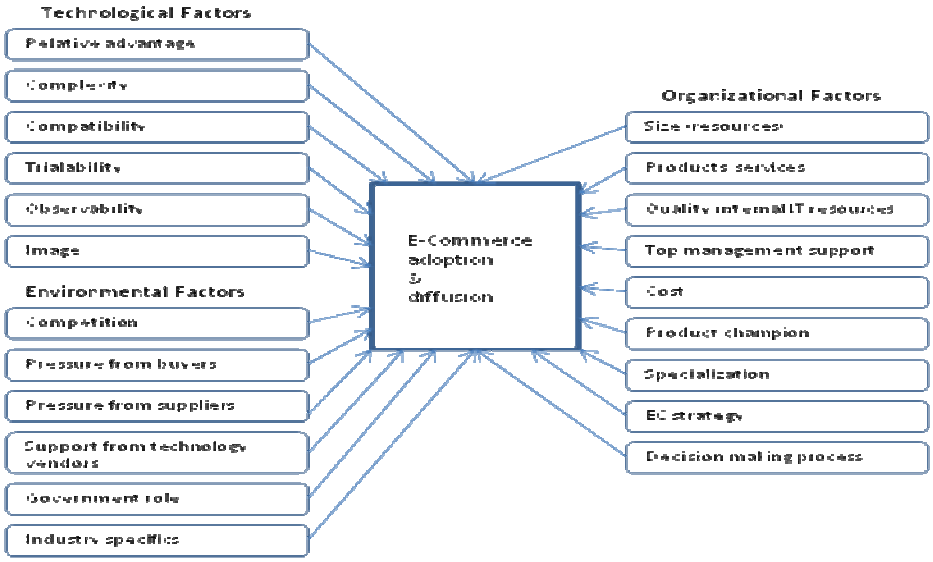

Figure 1. E-Commerce adoption and diffusion model in SMEs in developing countries.

METHODOLOGY

This research is exploratory in nature in the sense that there is no prior research in Jordan to guide this research endeavor. Historically, researchers tended to categories methods hierarchically and argued that case studies were appropriate for the exploratory phase of an investigation only (Yin 1994). This research adopts Yin's (1994) multiple hard case (comparative) design in studying three single units of analysis (holistic). Multiple case studies (Yin, 1994) allow both within-case and cross-case analysis and comparisons to be made, therefore in the analysis stage each of the embedded cases in each unit of analysis (organization) must be considered, analyzed and compared with other embedded parts before the big case is compared with other cases to find patterns. For the full depiction of the case-studies design and analysis strategies refer to Al-Qirim (2010). Table 2 shows organizational information about the interviewed SMEs. Table 3 shows the different adopted EC technologies across the three cases.

SMEs	HT	DB	RH
Base	Amman	Amman	Amman
Interviewees	Executive manager, chief financial officer (CFO).	CEO	CEO, CIO, CFO
Business description	Manufacturer	Tourism/ticketing	IT services
Organization size based on number of employees (Full Tine Equivalent Employees (FTEs))	41 full time	8 employees	9 full time
Customers	B2B	B2B, B2C	B2B
Number of PCs	9 networked (5 admin and 4 in factory)	11 networked	6 networked
Number of servers	None	None	1
Applications	Sales management Accounting Inventory management Personnel Purchasing Production management	Ticketing management Accounting Personnel	Accounting

Internet connection	ADSL connection shared by the different PCs	ADSL	ADSL
Number of employees with connection to the Internet	5 PCs	8 PCs	6 pc's

Table 2. Organizational information about the different cases.

Internet technologies	HT	DB	RH
Communication technologies:			
– Internal email	X	X	X
– External email	X	X	X
– Email lists (List servers)	-	-	-
– Bulletin boards (Usenet)	-	-	-
– Others	-	-	-
Searching/retrieving tools:			
– FTP	X	-	X
– Telnet	-	-	-
– WWW browsing (through Microsoft explorer or Netscape)	X	X	X
– Others	-	-	-
Communication infrastructure and applications:			
– Intranet	-	X	-
– Extranet/VPN	-	-	X
– Internet based EDI	-	-	-
– Web site	X	X	X
– Others	-	-	-
Internet enabled technologies for commerce:			
– Mobile data systems	-	-	-
– Teleconferencing	-	-	-
– Video conferencing	-	-	-

Table 3. Adopted Internet technologies across the cases

FINDIGS AND CROSS CASE ANALYSIS

Table 4 summarizes the research findings.

Factors	Case HT	Case DB	Case RH	Remarks
Technological:				
Relative advantage	Important	Important	Important	- Increased market exposure - Obvious significant advantages mostly in Communications and Internet searching/browsing - Intangible benefits: Simple web sites (pages) as an image enhancement tool (web site as a brochure of the company and its products
Complexity	Not complex	Not complex	Not complex	- Not complex due to the simple EC initiatives - EC represents new business channel but with high uncertainty/risk factors - Being computer illiterate may raise complexity issues, this issue is less complex with younger generation - Cases retained optimistic view about

				future EC complexities.
Compatibility	Compatible	Compatible (Excising culture, values and the way people thinks is the most inhibitor for accepting something new, let alone accepting a radical innovation like EC)	Compatible (A misperception)	- Compatible with the cases (due to the simple EC initiatives) but not with their customers/retailers due to trust concerns. Establishing trust through endorsing the individual or the establishment image in cyberspace. Issues like authenticity and legal enforceability of contracts i.e., absence of the "ink-signature and the actual presence of the customer". - Retailers were not computer literate. - lack of receipt confirmation on EC transactions - The phenomenal growth of technology and EC (leaping) - Younger generation is more equipped now to deal with technology than anybody else. Traditional shopping experience - Spam - Fear from being fully reliant on technology (failure, losing personal skills (mere user))
Observability	Important	Important	Important	Quite observable but not significantly impacting EC adoption process as such (it did not show how EC could be adopted or adapted to suit specific business needs)
Trialability	Irrelevant Not applicable due to the small scale EC project	Irrelevant (no time)	Important (it's a plus)	**Not significant** No significant effect on EC adoption due to the small scale EC project
Image	Important	Important	Important	Important determinant to start EC initiative
Organizational:				
Quality of IT infrastructure and knowledge	Important	Important	Important	- Not integrated IT infrastructure and not linked with EC - EC sophistication correlates positively with size and quality IT infrastructure. - Acts as a driver (building the confidence to deal with another technological innovation like EC) but EC initiatives is not integrated with IT infrastructure as such.
Decision making plan/process	Central	Central	Central	- Central but in consultations with employees - Decisions are fast as the organization structure is flat but unstructured
Size (excess resources)	Important	Important	Important	Elements of company size like number of employees, number of products and clients, size of IT infrastructure
Cost	Irrelevant	Irrelevant	Irrelevant	- Not significant here due to the limited web initiatives and the investment made in web sites. - Could be justified on the basis cost savings accruing from using EC

				communications tools (emails, etc.)
Top management support	Important	Important	Important	- Points to CEO's role - Linked to CEO's IT knowledge, Innovativeness and involvement
Information content of products	Irrelevant Limited impact as products are physical	Irrelevant High (Service based)	Irrelevant Moderate (products are physical but the majority are services which is information based but not included in web site)	Even with physical products EC could be used to support selling and supporting services (i.e., software download, technical manuals, product details, etc.)
Specialization	Irrelevant	Irrelevant	Irrelevant	
Time	Irrelevant	Irrelevant	Irrelevant	Did not prevent them from adopting EC
Product champion	CEO	CEO	CEO	
EC strategy	Irrelevant	Irrelevant	Irrelevant	Did not exist.
Environmental:	B2B	B2C, B2B	B2B	
Competition	Irrelevant A necessity	Irrelevant A necessity	Irrelevant A necessity	Non-strategic EC initiatives.
Supplier pressure	Important	Important To adopt either "Sabre" or "Galilio" ticketing systems	Important	- Buyers are not online - Suppliers are online. In order to cope with technologically advanced external supplier (all through web searching and email)
Buyer pressure	Nonexistence In person	Nonexistence In person	Nonexistence In person	- Not enough online buyers (lack of knowledge, trust/security issues, poverty) - Customers and businesses have different needs
Government role and regulatory environment	Nonexistence	Nonexistence	Nonexistence	Not felt by the cases
Support from technology vendors	Weak	Weak	Weak	Did not impact EC adoption

Table 4. Summary of the research findings

DISCUSSION

Determinants of EC adoption and implications

Synthesizing the research findings reveal two perspectives concerning EC adoption in SMEs in Jordan:

1. Due to the simple EC initiatives in the cases, the most important drivers of EC adoption in this research were:
   a. Technological: relative advantage and the image.
   b. Organizational: size, central decision of the CEO (owner), Quality of internal IT resources (infrastructure and skills), and CEO's championship and attributes.
   c. Environmental: pressure from suppliers (B2B).

Thus, larger (resourceful) SMEs with innovative (attributes: involved, EC champion, IT/EC knowledge, etc.) CEO (an owner(s) as well) would adopt EC due to its relative advantage to the business, image enhancement, and pressure from suppliers to complete online correspondences. Web sites were not strategic and used mostly as a brochure for the company's products and services. However, the implications here three-fold. Initially, one could argue that the CEOs innovativeness

here is incomplete as it did not lead to the adoption of sophisticated web site features. Given the impact of the business environment in Jordan, as explained above, leads to a conclusion that adopting any EC initiatives represents risky endeavor let alone going ahead with fully fledged and integrated EC initiatives. Foreseeing the potential importance of EC needs an innovative and a champion CEO. Secondly, as the web initiative were not profitable as such, sustaining the investment made in the web sites (building, hosting, updating, etc.) further confirms the CEOs innovativeness here. The reported advantages were not that significant as the SMEs accrued mostly intangible benefits (image enhancement, brochure, etc.). This should be balanced with the fact that email represented a technological revolution in business communications and replaced many of the existing and costly traditional tools (fax, telex, telephones, etc.). Finally, as for the SME's size, this means that larger SMEs have sufficient resources to trial with EC technology. This entails that such SMEs can afford to take risks and tolerate incurring losses. However, these EC initiatives were limited which may lead to a conclusion that such EC initiatives should be more sophisticated and that the situation is even worse in the case of smaller SMEs. These are areas that require further investigation.

2. Factors like observablity (leading to adoption decision), triability (rejected by the cases), and specialization were not highlighted as potential influencers on EC adoption decision. However, the remaining insignificant factors in this research attracted many discussions from interviewees. Initially, those factors appeared as insignificant due to the limited EC initiatives in the cases. The SMEs envisioned having more sophisticated EC features (conducting online transaction, further integration, transformation) in the future where such factors could play crucial role in determining adoption decisions. So, the following hypotheses could well be investigated by a future longitudinal research tracing the progress of the EC phenomenon in SMEs in Jordan. Although EC was not viewed currently as complex or as incompatible, in the future when Jordan SMEs attempt to adopt more sophisticated EC features, it is expected that such factors could play important role in determining the direction of the EC initiatives. Such efforts involved in establishing advanced EC would be complex and could raise different incompatibilities which negatively impact existing practices and norms. For example, establishing online trust will be a big challenge for SMEs in the future and in their attempt to increase the online buying stake by changing the behavior of businesses and customers in Jordan.

The quality of the IT infrastructure and knowledge contributed positively to the adoption decision but was not conclusive in this research. However, quality of the IT infrastructure and IT knowledge (business IT: CEO; Technical IT: technical staff) would resemble the building foundation for the sophisticated EC initiatives. Without this resource and expertise, the SMEs will not be able to acquire and build successful EC initiatives. Elahi and Hassanzadeh (2009) found high correlation between the degree of EC adoption and the stages of EC development. Of course, cost as an important factor to the envisioned phase will play crucial role as such EC initiatives will require considerable investments. Information content of products will further assist in streamlining the process. For example, in the case of DB where its products are mainly information based, having online ticketing web site will enable DB provide full end-to-end online services where the customer pay online and print the emailed electronic ticket.

It is clear that having advanced EC initiatives should be executed according to a well drafted EC strategy which should be an integral part of the company's overall strategic plan as well. Due to the current simple EC initiatives in the cases, competition and pressure from buyers (both B2B and B2C) did not impact the adoption decision. With more increased global interconnectedness, free trade and lowering entry barriers, technological advancements and reduced costs, and increased awareness of EC advantages it is expected that the online demand of the global community for services to increase. This increase will heat up the competition amongst companies and buyers will exert more pressure on vendors to provide more integrated online services. This is just the beginning as EC metamorphosis is an ongoing process. Performance of technology vendors was viewed negatively by the cases but it did not impact the adoption decision of simple EC initiatives. This needs to be addressed as highlighted by the cases. Such vendors need to increase both their capabilities and capacities in order to deliver innovative and integrated EC solutions. The Government role in promoting EC amongst Jordanian SMEs was almost nonexistence in this research and hence did not impact EC adoption. This research discussed different scenarios where the government could play more proactive role in promoting EC. It is understandable that the political system and constitution in Jordan does not intervene directly into the business environment but setting the plan to promote the large scale diffusing of EC in Jordan is crucial. Setting the governing guidelines and regulations to facilitate and safeguard EC transactions in cyberspace is a must. Also business societies, non-profit organizations, lobbying groups, unions and other important pressure groups could play vital role here as well.

Specifics

From the research analysis it was observed that some themes emerged which may influence the direction of EC adoption.

Business type

It was observed in this research that there is a gulf between businesses and EC and this varied according to the industry type as highlighted above. When asked about small businesses that are likely to know about or adopt EC, RH highlighted that this aspect depends on certain sectors in the market. Companies working in the IT industry, retailing companies and educational institutions are more likely to adopt EC than construction and civil/electrical contractors. DB highlighted that the aviation industry is one of the largest consumers of technology in the world and commented 'unfortunately, we are fully reliant on technology right now and if it stops our business will come to a complete halt…it is becoming the air we breathe everyday….it is our global link'.

Product specifics

It was evident in this research that certain aspects pertaining to the digitize-ability of products over the Internet could play crucial role in EC success. For example, DB provides information-based services as detailed above which could be transacted completely online. Thus, according to this aspect in products, certain SMEs would be encouraged to adopt EC earlier or more than others. HT and RH indicated that although their products were not fully digitize-able as such but certain aspects relating to their products could be digitized on the web (i.e., manuals, technical designs, etc.).

Vertical linkages

Being a member in IATA, DB is linked completely to its systems and follows its standards in searching for flights and tickets reservations and issuing. All accounts are settled between Company B and IATA electronically even the financial issues. This associations was highlighted by the literature as influencing adoption (Premkumar & Roberts, 1999) and may influence DB adopt certain IT or EC technologies.

Theoretical contributions

This research extended the technological innovations theories (IDT) to EC adoption in SMEs in DC and accordingly, developed a theoretical framework to guide this research in investigating this phenomenon in Jordan. Surrogates were extended from EC adoption research in DC to reinforce the framework with more relevant constructs. The framework assisted in shedding more light into determinants of EC adoption in the cases and estimated the potential impact of those factors on EC adoption in the future. The contextual approach laden in IDT and the case-study design assisted in creating thick descriptions surrounding main technological, organizations, environmental impending issues relating to EC adoption in the cases.

The research results were in line with the EC literature in SMEs and in DC and to the portrayed framework. For example, Molla and Licker (2005) found that organizational factors especially the human, business and technological resources and awareness are more influential than environmental factors in the initial adoption of EC. Our results supported such conclusions. According to the simple EC initiatives in this research, the role of the environmental factors was almost nonexistence (with the exception of pressure from suppliers). Also our research supports other research which raised similar findings in line with the two perspectives highlighted in this research (current and envisaged EC initiatives). For example, Elahi and Hassanzadeh (2009) found the following factors influencing adoption: executives positive understanding of EC, executives support for EC plans, financial ability to finance EC set up costs, financial ability to execute employees training courses, financial ability to finance Internet connection, believing to create new opportunities via EC, believing to privacy in EC, high level of innovation in organization, ratio of use of information technology (fax, telephone, Internet, extranet, video conferencing) by employees, existence of formulated training plan to train EC needed skills for employees, familiarity of employees with EC impacts on different business processes, and high external market scope, high degree of product digitalizability, and high degree of brand reputation. Our research did not focus on training as a such but training was emphasized in this research as important driver. Further, Molla and Licker (2005) concluded that whether or not an organization has attained an interactive or integrated EC status is dependent on environmental factors together with commitment and the governance model. This research supports this finding but from the envisioned EC perspective where the environmental factors will contribute more specifically to increased online transactions.

This research is of interest to researchers, policymakers and professionals. Researchers could learn about conceptual drivers and impediments of EC adoption in SMEs in DC and apply this knowledge in their countries or in conducting comparative studies. Professional could capitalize on the different insights provided here to fine-tune their training programs and marketing strategies targeting SMEs more specifically. Vendors could revise their strategies toward the SMEs sector with more focused strategies and marketing campaigns. Policymakers could focus their policies toward addressing more impending issues concerning the SME's sector in DC.

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